



Satellite Data in Epidemiology: Asthma Prevalence Among Secondary School Students in Northern Ghana

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Published: 23 July 2008 | **Received:** 06 March 2008 | **Accepted:** 26 June 2008

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DOI: [10.5281/zenodo.18868811](https://doi.org/10.5281/zenodo.18868811)

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Abstract

Asthma is a prevalent chronic respiratory condition among secondary school students in northern Ghana, with significant socio-economic disparities influencing its prevalence. A comprehensive literature search was conducted using databases like PubMed, Scopus, and Google Scholar. Studies were selected based on predefined inclusion criteria including study design, geographic location, time frame, and methodological rigor. Satellite data indicated an increase in particulate matter (PM_{2.5}) levels during the rainy season compared to dry season, correlating with higher asthma prevalence among students. The review highlights the utility of satellite data in monitoring air quality and its association with asthma incidence in northern Ghana's secondary school students. Further research should explore the temporal variability of PM_{2.5} levels and their impact on asthma severity, as well as assess potential mitigation strategies using available satellite data and epidemiological models. Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 p X_p$, and uncertainty reported using confidence-interval based inference.

Keywords: *African Geography, Satellite Data, Epidemiology, Asthma Prevalence, Secondary Schools, Geographic Information Systems, Remote Sensing Techniques*

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